

Patent Claims

1. A method for the operation of a power plant with a closed or quasi-closed cycle, the power plant substantially comprising at least one compressor unit (1) or a pump, at least one combustion chamber (2), at least one turbine (3) and at least one heat sink (4), a fuel mass flow (14) reacting with at least one oxygen flow (12) in the combustion chamber (2) to form a hot gas which is expanded in a work-performing manner in the at least one turbine (3), and the excess combustion products which are formed ( $\text{CO}_2$ ,  $\text{H}_2\text{O}$ ) being removed from the cycle at a suitable location (5, 6), characterized in that the oxygen stream (12) which is fed to the combustion chamber (2) is obtained by means of an air fractionation installation (11), and means (9) for coarse fractionation of the supplied air (8) are connected upstream of this air fractionation installation (11), in order to supply oxygen-enriched air (10) to the air fractionation installation (11).

2. The method for the operation of a power plant as claimed in claim 1, characterized in that the air fractionation installation (11) operates according to the cryogenic principle.

3. The method for the operation of a power plant as claimed in claim 1, characterized in that the means (9) for the coarse fractionation of the supplied air is based on an at least single-stage membrane process.

4. The method for the operation of a power plant as claimed in claim 1, characterized in that the means (9) for coarse fractionation of the supplied air is based on a vacuum swing adsorption process.

5. The method for the operation of a power plant as claimed in claim 1, characterized in that the means (9)

for the coarse fractionation of the supplied air (8) increases the oxygen content of the air (10) supplied to the air fractionation installation (11) to at least 40 per cent by volume (40 vol%).

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6. The method for the operation of a power plant as claimed in claim 3, characterized in that the permeated air component is oxygen.

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7. The method for the operation of a power plant as claimed in claim 3, characterized in that the permeated air component is nitrogen.

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8. The method for the operation of a power plant as claimed in claim 3, characterized in that heat which is required for the membrane process is provided by thermal integration with the waste heat utilizer (4) of the gas turbine process.

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9. The method for the operation of a power plant as claimed in claim 3, characterized in that refrigeration required for the membrane process is provided by thermal integration with the air fractionation installation (11).